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Confidence Restoration Following Athletic Injury¹

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The impact of goal orientations, perceptions of social support, and sources of rehabilitation confidence on the process of confidence restoration from athletic injury was examined among 40 injured intercollegiate athletes (ages 18 to 22 years). Athletes completed the Task and Ego Orientation in Sport Questionnaire (TEOSQ; Duda & Nicholls, 1992), the Social Support Questionnaire (SSQ; Duda, Smart, & Tappe, 1989), and modified versions of the Sources of Sport Confidence Questionnaire (M-SSCQ; Vealey, Hayashi, Garner-Holman, & Giacobbi, 1998) and the State Sport Confidence Inventory (M-SSCI; Vealey, 1986) within the first two days of their rehabilitation program. The SSQ, M-SSCQ, and M-SSCI were completed during the midpoint of the rehabilitation and the day before returning to practice/competition. Results indicated that the tendency to emphasize task-involved goals in sport significantly predicted the selection of mastery and more self-referenced sources of confidence in rehabilitation. Athletes who perceived more social support specific to injury rehabilitation at the beginning of the rehabilitation program were more likely to rely on performance sources to build confidence.

An important component related to the psychological recovery of athletic injury is athletes' cognitive response to injury. Research has found that one of the major cognitive responses following injury is the decrease in athletes' self-efficacy and/or confidence beliefs about returning to full participation (Bandura, 1990; Heil, 1993; Taylor & Taylor, 1997; Wiese-Bjornstal, Smith, Shaffer, & Morrey, 1998). Therefore, athletes must first undergo the process of restoring self-efficacy/

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confidence beliefs about their capabilities to perform successfully in sport prior to returning to full competitive involvement.

Although the concept of efficacy restoration is not novel (Bandura, 1990), research has yet to empirically examine this process in the context of the athletic rehabilitation setting. Drawing from the work of Bandura (1990), efficacy restoration was defined in the current work as the restoration of self-confidence about successfully performing in sport that is to a level where the individual feels confident enough to return to competition following the completion of injury rehabilitation.

Based on the theoretical tenets of social cognitive theory (Bandura, 1997), it is assumed that both personal and situational factors influence the sources of confidence and/or efficacy beliefs adopted in the rehabilitation setting. Furthermore, it is suggested that these sources impact self confidence or efficacy judgments regarding the ability to make a successful transition into full participation following the termination of the rehabilitation protocol (Bandura, 1990). In the present study, we examine potential predictors of the sources of confidence information used by injured athletes in the rehabilitation setting. This research also centered on the interdependencies between sources of confidence information and the process of efficacy restoration during athletic injury rehabilitation.

Self-confidence as measured and examined in the athletic context is conceptualized as individuals' belief in their ability to successfully perform in sport (Feltz & Chase, 1998; Vealey, 1986). Similar to Bandura's (1977, 1997) conceptualization of self-efficacy, research on sport self-confidence has been grounded within the theoretical framework of social cognitive theory (Vealey, 1986; Vealey, Hayashi, Garner-Holman, & Giacobbi, 1998). Indeed, the concepts of self-confidence and self-efficacy (expectations regarding the successful completion of a particular task) share considerable conceptual overlap (Feltz & Chase, 1998; Schunk, 1995, 1996; Vealey et al., 1998). With the aim of maintaining consistency between conceptualization and measurement, the term *self-confidence* will be utilized from this point forward in this paper.

Recent work in sport has investigated the sources athletes use to build their self-confidence (Vealey et al., 1998). This research suggests that the identification of the determinants of confidence judgments over a period of time leads to better prediction of athletes' performance and evaluation of the sport experience than an assessment of overall level of self-confidence. When athletes are injured and removed from sport participation, it is possible that they rely on rehabilitation progress and performance to ascertain their readiness to return to sport following the completion of rehabilitation (Bandura, 1990; Heil, 1993). Therefore, in the current study, the sources athletes use to judge their self-confidence over the course of rehabilitation were expected to differentially predict the restoration of self-confidence about returning to competitive sport activities following the completion of the rehabilitation protocol.

Situational factors, such as the climate of the training room and the sources of support athletes perceive during injury rehabilitation, have also been purported to have an impact on athletes' interpretations of and responses to sport injury and rehabilitation (Ewart, 1990; Taylor & Taylor, 1997; Udry, 1996; Wiese-Bjornstal et al., 1998). Social support in rehabilitation from athletic injury appears to be a critical environmental factor. Past work has found that athletes may turn to others to minimize their sense of loss following an injury (Udry, 1996). Indeed, perceived social

support has been found to be a positive predictor of adherence to the rehabilitation protocol in previous work on injured college athletes (Duda, Smart, & Tappe, 1989).

The role or influence of social support may vary among athletes depending on the sources of support that are made available during the rehabilitation process (Taylor & Taylor, 1997). Injured athletes may experience uncertainty when trying to evaluate performance outcomes and their overall progress on rehabilitation exercises. Therefore, rehabilitating athletes may rely on the guidance and feedback of salient significant others (e.g., the athletic trainer, coach) in order to evaluate their current abilities. In other words, the presence of social support may influence self-confidence because supportive significant others become important sources of confidence information for injured athletes. Ewart (1990) found that in addition to mastery experiences, cardiac patients utilized forms of persuasion (e.g., verbal feedback and self-talk) to enhance perceptions of physical self-efficacy three weeks after they suffered a heart attack. In the current study, a similar relationship is expected between social support and self-confidence judgments in athletic injury rehabilitation.

In addition to situational factors, an individual difference factor, which may impact the confidence restoration process, is the athletes' goal orientation. These are dispositional inclinations regarding the evaluation of their perceptions of ability (and ways of judging subjective success) in achievement situations (Nicholls, 1984). The two major goal orientations are termed task and ego orientation. When primarily task oriented, the goal of the individual tends to be learning, trying hard, focusing on personal improvement, and/or mastering the task. Regardless of perceived competence, task-involved individuals have been found to display adaptive achievement behaviors such as choosing challenging tasks, exerting maximal effort, and persisting when faced with difficulty (Duda, 1992, 1993; Nicholls, 1984). These same adaptive patterns are believed to exist in the case of predominantly ego-oriented individuals as long as their perceived competence for the task is high. Conversely, an emphasis on ego-involved goals coupled with low perceived competence is assumed to lead to the exhibition of maladaptive behaviors such as choosing tasks that are too easy or too hard, not trying as hard as possible, and/or "dropping out" of the activity in question (Nicholls, 1984, 1989).

When perceptions of competence are more self-referenced (i.e., when task orientation is very strong), this orientation is assumed to contribute to a more resilient sense of perceived ability (Nicholls, 1984, 1989). In contrast, perceptions of adequate competence are held to be more "at risk" when ego involvement prevails. This is because the focus in this case is to demonstrate normatively superior ability. Past research examining the relationship between individuals' goal orientations and self-efficacy beliefs suggests that the adoption of task-involved goals and/or the perception of a task involving climate corresponds to enhanced efficacy beliefs regardless of performance outcome (Chi, 1993; Kavussanu & Roberts, 1996; Schunk, 1995, 1996). In contrast, a proneness for ego orientation has been found to be related to lower efficacy beliefs, especially for those with low perceived competence and/or following a poor performance (Chi, 1993; Kavussanu & Roberts, 1996).

With respect to athletic injury rehabilitation, Duda and colleagues (1989) examined the relationship of perceived efficacy of the treatment and goal orientations to adherence. Results indicated that athletes who believed in the efficacy of the treatment and placed more emphasis on task-involved goals in sport were more

likely to adhere to the rehabilitation protocol. Lampton, Lambert, and Yost (1993) also determined the relationship of goal orientations and self-esteem to treatment adherence in a sports medicine clinic and found that individuals low in self-esteem and high in ego orientation tended to miss the most treatment appointments. In explicating their findings, Duda et al. (1989) pointed to the implications of both individual differences in goal perspective and efficacy beliefs to variations in athletes' adherence in rehabilitation. Similar to what was observed in terms of positive predictors of adherence to rehabilitation in the Duda et al. (1989) and Lampton et al. (1993) studies, goal orientations and confidence beliefs were expected to relate to the overall restoration of athletes' confidence over the course of rehabilitation in the current research.

Aligned to what was postulated for social support, one mechanism by which goal orientations might influence self-confidence is that they relate to tendencies regarding the type of information and processes employed to judge level of competence. Williams (1994) was the first to demonstrate a conceptually consistent link between goal orientations and the selection of sources of competence in the sport domain. In her study, task orientation related to a preference for using goal attainment, learning and improving as sources of competence, whereas ego orientation was associated with the reported use of social comparison information when individuals appraised their ability level. Consistent with Williams' (1994) study, we expected conceptually consonant associations between athletes' goal orientations and their appraisal of confidence information in the athletic injury rehabilitation setting.

In sum, one purpose of this investigation was to independently assess the impact of goal orientations and perceptions of social support on the sources of confidence emphasized by injured athletes. A second aim was to examine the relationship of sources of confidence and self-confidence on confidence restoration during recovery from an athletic injury (Figure 1). Specific to projected associations between goals and sources of self-confidence during rehabilitation at each time assessment, task orientation was expected to be positively linked to mastery and personal preparation sources, while ego orientation was expected to relate to an emphasis on the demonstration of ability. The interrelationships between goal orientations and the other sources of self-confidence information were examined

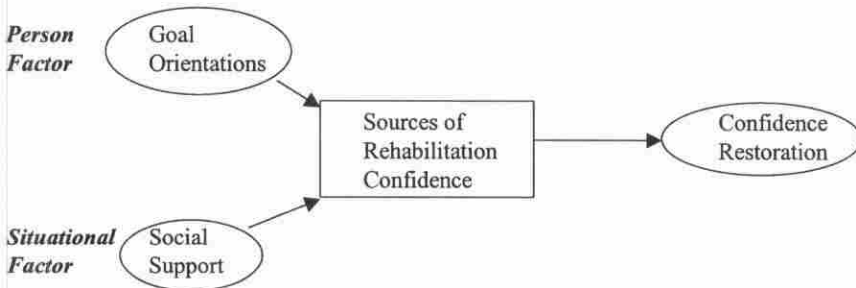


Figure 1 — Influence of goal orientations, perceptions of social support, and sources of rehabilitation confidence on confidence restoration at the onset, midpoint and end of rehabilitation from athletic injury.

in an exploratory manner; no specific hypotheses were generated regarding these other sources. Second, it was postulated that at each time period, athletes' perceptions of social support would correspond to an increased salience of more external/environmental self-confidence sources. Finally, the self-referenced and environmental sources of self-confidence in rehabilitation were hypothesized to positively relate to confidence restoration at the onset, midpoint, and conclusion of the rehabilitation process.

Method

Participants

Forty male ($n = 17$) and female ($n = 23$) intercollegiate athletes between the ages of 18 and 22 years ($M = 19.72$, $SD = 1.43$) participated in this study. All of the athletes sustained a sport-related injury that required a minimum of one-week physical rehabilitation prior to data collection. The participants were members of National Collegiate Athletic Association Division I, II, and III athletic teams from nine midwestern universities and represented a variety of individual and team sports. The majority of the athletes were from Division I institutions ($n = 23$) and were in season ($n = 33$). The athletes in this study reported an average of nine years ($SD = 3.83$) experience in their intercollegiate sport and 28 had experienced previous injuries while participating in this activity. The athletes' team physician and athletic trainer determined classification of the injury severity, and the classification standards were based on the guidelines set by the National Athletic Trainers Association. The first degree severity injury group included 11 athletes who spent an average of 2 weeks in rehabilitation. Fourteen athletes were classified as having a second degree severity injury and spent an average of 5 weeks in rehabilitation. Finally, 15 athletes were classified as having a third degree injury and spent an average of 13 weeks in rehabilitation. The overall sample population spent an average of seven weeks ($SD = 6.33$ weeks) in rehabilitation.

Measures

Goal Orientations in Sport. The Task and Ego Orientation in Sport Questionnaire (TEOSQ; Duda & Nicholls, 1992) was used to assess individual differences in goal orientation within the sport context. The TEOSQ contains 13 items and asks the athletes to reflect on when they feel successful in their respective sport and respond to each item on a 5-point Likert scale ranging from (*SD*) *strongly disagree* to (*SA*) *strongly agree*. Seven items are designed to assess variations in the proneness for task goals (e.g., "I feel successful when I work really hard"), and six items assess proneness for ego-involved goals (e.g., "I feel successful when I can do better than others"). The TEOSQ has been found to be both reliable and valid in past sport psychology research (Duda & Whitehead, 1998). In this study, the observed internal reliability was .86 for the task dimension and .81 for the ego dimension.

Social Support. The Social Support Questionnaire is a 6-item questionnaire, which was employed in past research focused on the athletic injury rehabilitation process (Duda et al., 1989). This inventory assessed the amount of social support athletes perceive from friends, parents, family members, teammates, coaches, and athletic trainers during their rehabilitation. The athletes were asked

to rate the amount of social support on a 7-point Likert scale (1 = *not at all supportive* to 7 = *extremely supportive*). The social support for rehabilitation subscale revealed Cronbach Alphas of .77 (pre-assessment), .73 (mid-assessment), and .62 (post-assessment).

Sources of Self-Confidence. The Sources of Sport-Confidence Questionnaire (SSCQ), developed by Vealey and colleagues (1998), was used to measure athletes' sources of confidence information. In this study, the measure was modified (M-SSCQ) to examine the athletes' sources of confidence specific to the rehabilitation context. When completing the questionnaire, the athletes were presented with the statement "I usually gain self-confidence in my rehabilitation program when I . . ." and then rated their level of confidence regarding each item on a scale from 0 (*not at all confident*) to 100 (*completely confident*).

The questionnaire contains 43 items and a total of nine subscales: mastery (i.e., "improve my performance on a rehabilitation skill"), demonstration of ability (i.e., "demonstrate that I am better than others in rehabilitation"), physical/mental preparation (i.e., "I know that I am mentally prepared for rehabilitation"), physical self-presentation (i.e., "I feel good about my weight"), social support (i.e., "I get positive feedback from my teammates and/or friends"), athletic trainer's leadership (i.e., "I believe in my trainer's abilities"), vicarious experience (i.e., "I see successful rehabilitation performances by other athletes"), environmental comfort (i.e., "I like the environment where I am performing"), and situational favorableness (i.e., "I see the breaks are going my way"). All of the sources of sport confidence subscales, except for the situational favorableness, trainer's leadership, and environmental comfort subscales, exhibited acceptable reliability ranging from .71 to .97. Based on the observed low alphas of .67, .45, and .71 for the situational favorableness subscale and the questionable applicability of the scale items for the rehabilitation setting, this subscale was removed. The environmental comfort and trainer's leadership subscales both displayed marginal alphas of .71, .55, and .70 and .77, .70, and .75 for pre, mid, and post assessments, respectively. Removal of one item (i.e., "follow certain rituals") from the environmental comfort subscale resulted in recalculated alphas of .87, .86, and .89. Further, the item "know my trainer is a good leader" was removed from the trainer's leadership subscale and this resulted in alphas of .92, .93, and .91. With these slight modifications, the latter two subscales were retained for subsequent analyses.

Confidence Restoration. A modified version of the State Sport Confidence Inventory (M-SSCI; Vealey, 1986) was used to assess athletes' self-confidence about successfully performing athletic skills in future competition. This 13-item questionnaire asked the athletes to "Rate the confidence you feel since your injury in your ability to . . ." and respond to each item (e.g., "make critical decisions during competition") on a scale from 0 (*not at all confident*) to 100 (*completely confident*). The questionnaire was found to be internally reliable in this study with alphas of .98, .98, and .97 emerging for the pre-, mid-, and post-assessments, respectively.

Procedures

Participation in this study was voluntary. After human subjects approval was granted, any of the athletes that had been diagnosed with a sport-related injury that required them to miss practice and/or competition and entailed a minimum of one-week rehabilitation were asked if they would be willing to participate in the study.

Participating athletes first signed a consent form confirming their agreement to be involved in this investigation. The athletic trainer then followed the designated procedures for data collection. Within two days of the commencement of the rehabilitation program, the injured athletes completed the first of three packets of questionnaires, which included the Task and Ego Orientation in Sport Questionnaire (TEOSQ; Duda & Nicholls, 1992), the Social Support Questionnaire (Duda et al., 1989), a modified version of the Sources of Sport-Confidence Questionnaire (M-SSCQ; Vealey et al., 1998), and a modified version of the State Sport-Confidence Inventory (M-SSCI; Vealey, 1986). During the mid-point and the day before the athletes were released to return to competition (determined by the athletic trainer), they completed a packet of questionnaires. The mid- and post- assessment packet of questionnaires comprised the SSQ, M-SSCQ, and M-SSCI. Each set of questionnaires took approximately 15 minutes to complete. Once the injured athletes completed a set of questionnaires, it was placed in an envelope and sealed. The trainer then mailed the sealed envelopes containing the results to the primary investigator.

Results

Descriptive Statistics for Independent and Dependent Variables

Scale means and standard deviations for the measures of goal orientations, perceptions of social support, sources of self-confidence, and confidence restoration for the entire sample are presented in Table 1. There was little change in perceptions

Table 1 Means and Standard Deviations for Measures of Goal Orientations, Perceptions of Social Support, and Sources of Rehabilitation Confidence Across the Three Time Periods

Measure	Time One	Time Two	Time Three
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)
Goal orientations			
Task orientation	4.39 (.53)		
Ego orientation	3.31 (.72)		
Perceptions of social support			
Social support	6.15 (.78)	6.12 (.68)	6.28 (.59)
Sources of self-efficacy			
Physical self-presentation	67.5 (20.8)	68.6 (17.7)	66.8 (21.7)
Vicarious experience	68.7 (24.4)	72 (21.6)	69.9 (22.9)
Demonstration of ability	68.9 (19.4)	68.5 (20.7)	70.2 (19.9)
Physical/mental	81.4 (12.3)	80.3 (14)	78 (13.5)
Preparation			
Mastery	82.2 (16.7)	83.6 (13.4)	82.3 (16)
Social support	83.1 (13.6)	82.7 (16.7)	84.3 (14.7)
Environmental comfort	84.4 (12.6)	84.7 (12.4)	83.8 (14.1)
Trainers leadership	86.5 (12.2)	85.8 (11.7)	85.9 (13.1)
Perceptions of restoration			
Confidence restoration	74.9 (24.3)	77.2 (20.7)	85.6 (14.3)

of social support over the course of rehabilitation. The mean scores for the sources of confidence also demonstrated a stable pattern across all three administrations. Among this sample of athletes, the greatest emphasis was placed on the trainer's leadership and environmental comfort sources of confidence. This finding reinforces the relevance of the athletic trainers and the rehabilitation context they help create to athletes' interpretations of and responses to athletic injury rehabilitation.

The dependent variable, confidence restoration, demonstrated a progressive increase over the course of the rehabilitation period (see Table 1). In other words, this sample of injured athletes reported increased confidence about returning to participation while rehabilitating from injury. Initial analyses indicated that there were no significant differences in confidence restoration beliefs based on gender, injury severity, or time spent in rehabilitation.

Interrelationships Between Perceptions of Social Support and Sources of Self-Confidence

To examine the relationship between perceptions of social support and self-confidence sources, Pearson Product Moment correlations (see Table 2) were conducted for Time One, Time Two, and Time Three.

Social support was positively related to the demonstration of ability and mastery sources at Time One. Therefore, athletes who perceived more social support at the very onset of the rehabilitation program were utilizing performance sources to restore self-confidence. At Time Two, perceptions of social support were significantly correlated with the environmental sources of self-confidence: environmental comfort, social support, and trainer's leadership and self-persuasion sources: physical/mental preparation and mastery. Thus, the athletes who had higher perceptions of social support were utilizing more sources by the midpoint of the rehabilitation program. These same significant relationships, except for trainers leadership, also emerged at Time Three.

Table 2 Correlations between Perceptions of Social Support and Sources of Rehabilitation Confidence Across Times One, Two and Three

Sources of confidence	Perceptions of Social Support		
	Time One	Time Two	Time Three
Demonstration of ability	.47**	.25	.07
Mastery	.39**	.49**	.38*
Environmental comfort	.11	.46**	.47**
Mental/physical preparation	.12	.56***	.43**
Physical self-presentation	.20	.15	-.04
Social support	.19	.65***	.39*
Trainer's leadership	.20	.39**	.27
Vicarious experience	.14	.23	.24

* $p < .05$, ** $p < .01$, *** $p < .001$.

Relationship Between Goal Orientations and Sources of Self-Confidence

Pearson Product-Moment correlations (see Table 3) were calculated to assess the relationships between task and ego orientation with each of the eight sources of confidence.

As shown in Table 3, task orientation was positively correlated with the physical/mental preparation, trainer's leadership, and environmental comfort sources of self-confidence across the three periods. Task orientation was also significantly and positively related to the mastery, social support, and vicarious experience sources at Time Two and Time Three. Task orientation was positively associated with physical self-presentation only at Time Two and was not positively correlated with the demonstration of ability source of self-confidence at any of the three assessment periods. Ego orientation was positively correlated with demonstration of ability and physical self-presentation at Time One, trainer's leadership and social support at Time Two, and trainer's leadership, environmental comfort, and mastery at Time Three. Ego orientation was not significantly related to the physical/mental preparation source of self-confidence or the vicarious experience source at any of the three time periods.

A series of hierarchical regression analyses were then conducted with the centered goal orientation main effects, $(X - M)/SD$, entered first (task and ego) followed by the interaction term (product of task and ego orientation) entered in the second step for each of the eight sources of confidence information as the dependent variables. Following the procedures outlined by Aiken and West (1991), the variables were centered to prevent the main effects and interaction terms from being highly correlated. These analyses were done separately at Time One, Time Two, and Time Three. We were aware of the possibility of an increased experiment-wise error due to our conducting eight separate regression analyses. However, due to the small sample size, a .05 critical alpha level regarding the identification of significant findings was maintained.

Table 3 Correlations Between Task and Ego Orientation and Sources of Rehabilitation Confidence

Sources of confidence	Task orientation			Ego orientation		
	Time One	Time Two	Time Three	Time One	Time Two	Time Three
Mastery	.28	.44**	.34*	.19	.10	.34*
Demonstration of ability	.12	.10	.14	.50***	.11	.14
Physical/mental preparation	.57***	.56***	.54***	.08	.01	.14
Physical self-presentation	.10	.41**	.29	.41**	.19	.21
Social support	.28	.37*	.41**	.30	.34*	.28
Trainer's leadership	.34*	.56***	.45**	.28	.32*	.41**
Vicarious experience	.24	.50**	.37*	.20	-.04	-.01
Environmental comfort	.40**	.46**	.38*	.26	.30	.47**

* $p < .05$, ** $p < .01$, *** $p < .001$.

At Time One, hierarchical multiple regression analyses indicated that goal orientations accounted for 24% of the variance in the demonstration of ability confidence source with ego orientation best explaining this relationship (ego $b = .47, p = .001$; task $b = .15, p = .25$). The main effects model for goal orientations accounted for 14% of the variance in the selection of the social support confidence source with ego orientation providing a significant contribution to the model ($b = .33, p = .04$) and task orientation approaching significance ($b = .31, p = .06$). Ego orientation also significantly contributed to the prediction of the physical self-presentation source of confidence (ego $b = .43, p = .009$; task $b = .14, p = .39$) with the regression model accounting for 15% of the variance. The main effects model accounted for 30% of the variance in the physical/mental preparation, and task orientation significantly explained the emphasis placed on this confidence source (task $b = .57, p = .001$; ego $b = .12, p = .38$). Both goal orientations predicted the selection of the environmental comfort source accounting for 20% of the variance (task $b = .42, p = .007$; ego $b = .29, p = .05$), and trainer's leadership (task $b = .36, p = .02$; ego $b = .32, p = .04$), explaining 16% of the variance. The regression models failed to predict the selection of the mastery source (task $b = .30, p = .07$; ego $b = .22, p = .18$), and the vicarious experience source (task $b = .26, p = .12$; ego $b = .22, p = .19$). The interaction term failed to emerge as a significant predictor for any of the sources at Time One.

Consistent with what was found at Time One, at Time Two, task orientation explained a substantial amount (i.e., 27%) of the variance accounted for in the selection of the physical/mental preparation source (task $b = .54, p = .001$; ego $b = .003, p = .82$). Task orientation also significantly contributed to the predictive utility of the main effects model which accounted for 16% of the variance in the mastery source (task $b = .44, p = .007$; ego $b = .13, p = .42$). Task orientation emerged as the significant parameter for the main effects model that explained 17% of the variance in the physical self-presentation source (task $b = .42, p = .009$; ego $b = .22, p = .18$), and also 21% of the variance in vicarious experience (task $b = .49, p = .002$; ego $b = -.001, p = .91$). Together, task and ego orientation explained the emphasis placed on the more environmental sources of confidence, namely trainer's leadership, social support, and environmental comfort. The main effects model accounted for 23% of the variability in the social support source of self-confidence (task $b = .39, p = .01$; ego $b = .38, p = .02$), 41% of the variability in the selection of trainer's leadership source (task $b = .59, p = .001$; ego $b = .38, p = .001$), and 28% of the variance in the environmental comfort source of self-confidence (task $b = .45, p = .004$; ego $b = .32, p = .03$). The main effects model did not predict the selection of the demonstration of ability source (task $b = .009, p = .55$; ego $b = .12, p = .50$) and no significant interactions emerged at Time Two.

Hierarchical regression analyses at Time Three revealed that the main effects model accounted for 27% of the variance in the physical/mental preparation source. Task orientation substantially explained the selection of this source of confidence (task $b = .54, p = .001$; ego $b = .004, p = .73$). Task orientation also emerged as the significant parameter when predicting the selection of the vicarious experience source of confidence (Adjusted $R^2 = .08$, task $b = .37, p = .03$; ego $b = -.007, p = .97$). Similar to Time Two, both task and ego orientation significantly explained the environmental sources accounting for 22% of the variance in the social support source (task $b = .38, p = .008$; ego $b = .26, p = .05$), 34% of the variance in the environmental comfort (task $b = .40, p = .001$; ego $b = .47, p = .004$), and 35%

of the total variance in the trainer's leadership (task $b = .45$, $p = .01$; ego $b = .43$, $p = .001$) sources of self-confidence. However, in contrast to Time One and Two, both orientations also explained 19% of the variability in the mastery source (task $b = .35$, $p = .03$; ego $b = .35$, $p = .03$). The main effects model failed to predict both the demonstration of ability (task $b = .21$, $p = .22$; ego $b = .15$, $p = .38$) and physical self-presentation (task $b = .29$, $p = .07$; ego $b = .22$, $p = .17$) sources at Time Three and no significant interactions emerged.

Relationships Between Sources of Self-Confidence and Confidence Restoration

Consonant with the theoretical tenets of Bandura's (1977, 1997) self-efficacy theory, it was hypothesized that the sources of self-confidence related to past performance, vicarious experiences, and forms of persuasion should predict confidence restoration at each time assessment. Pearson Product Correlations (see Table 4) were calculated at Time One, and bivariate correlations were calculated at Time Two and Time Three to control for confidence restoration at Time One. Confidence restoration at Time One was not significantly associated with any of the sources of self-confidence at Time One. However, confidence restoration at Time Two was significantly related to the mastery and demonstration of ability sources, and confidence restoration at Time Three was positively correlated with the environmental comfort, mastery, physical/mental preparation, and social support sources of confidence information.

An a priori predictive model was devised and tested using a forced entry hierarchical multiple regression analysis. Confidence restoration at Time One was used as a baseline measure and entered first. After the variance attributed to this baseline measure was accounted for, the sources were entered in an order based on the theoretically assumed salience of the targeted sources of efficacy/confidence information (Bandura, 1977, 1997). Therefore, the performance sources of confidence (mastery and demonstration of ability) were entered first, followed by

Table 4 Bivariate Correlations (Except Time One) Between Rehabilitation Confidence Sources and Confidence Restoration

Sources of confidence	Confidence restoration		
	Time One	Time Two	Time Three
Mastery	.02	.33*	.49**
Demonstration of ability	.21	.37*	.24
Physical/mental preparation	.30	.17	.33*
Physical self-presentation	.31	.05	-.06
Social support	.06	.15	.41*
Trainer's leadership	.24	.09	.28
Vicarious experience	.05	-.03	.08
Environmental comfort	.16	.33*	.53***

* $p < .05$, ** $p < .01$, *** $p < .001$.

vicarious experience, forms of self-persuasion (physical/mental preparation), persuasion from others (i.e., social support, trainer's leadership, environmental comfort) and, finally, physiological arousal. These sources were regressed on the dependent variable confidence restoration at Time Two. The best model that emerged from this analysis was the model with confidence restoration ($b = 16.38, p = .001$) at Time One accounting for 48% of the variance, performance sources accounting for an additional 8% mastery ($b = .24, p = .05$), demonstration of ability ($b = .32, p = .02$), and vicarious experience ($b = -.28, p = .03$), adding to 4% of the variance in confidence restoration at Time Two.

For Time Three, the same model as Time Two emerged. Confidence restoration at Time One accounted for 26% of the variance ($b = 13.92, p = .001$), and the performance sources demonstration of ability and mastery accounted for an additional 14% of the variance (mastery $b = .69, p = .001$; demonstration of ability $b = .27, p = .13$). Vicarious experience explained an additional 12% of the variance ($b = -.59, p = .01$) in confidence restoration at Time Three. In general, these results suggest that athletes who were confident about returning to competition at the midpoint and completion of the rehabilitation program were using performance sources and observational experiences to build and restore overall confidence. The findings also indicate that the athletes' initial degree of confidence regarding a successful return to competition contributed to subsequent confidence levels during the rehabilitation process.

Discussion

One major purpose of this study was to investigate the independent contributions of dispositional (goal orientations) and situational (perceived social support) factors on the selection of confidence sources in the context of athletic injury rehabilitation. This study also examined the correspondence between these sources of confidence information on athletes' overall confidence restoration when rehabilitating from injury. The intent of the current research was to provide more insight into the interplay between environmental factors, motivational differences, and athletes' beliefs and cognitive processes within the intercollegiate athletic training room.

Perceptions of Social Support and Sources of Self-Confidence

In this study, social support was expected to relate to the selection of environmental sources of rehabilitation confidence. Specifically, it was hypothesized that perceptions of social support would predict the selection of trainer's leadership, social support, and environmental comfort sources of confidence information. Partial support was provided for this hypothesis as social support predicted the use of the environmental sources of self-confidence at Time Two and Time Three. One explanation for this result is that when these latter variables were assessed at Time One, it was within the first two days of the athletes' rehabilitation program. Therefore, it is possible the athlete did not have enough time to adequately evaluate the nature of the rehabilitation environment and the quality or type of assistance being provided. As a result, it would be unlikely for injured athletes to use such information when judging their self-confidence.

By the midpoint and at the completion of the rehabilitation program, athletes who had higher perceptions of social support were more likely to identify the environmental sources as determinants of their self-confidence. That is, as hypothesized, the stronger the perceptions of general support provided by parents, teammates, and trainers, the more likely athletes were to consider messages given from the athletic training context regarding their confidence level. More specifically, athletes high in perceived social support derived information regarding their self-confidence from the subsistence provided in the training room, the high capabilities of the athletic trainer, and the degree of familiarity and ease with the training environment.

In addition to the environmental sources, athletes with high perceptions of social support also identified personal evaluation strategies such as personal mastery (significant across each assessment period) and physical/mental preparation (significant at Times Two and Three) as sources of self-confidence. It is possible that overall social support helped athletes stay focused on their own personal progress in rehabilitation and facilitated the emphasis on more self-referenced sources of confidence information (such as the adequacy of their physical and psychological training).

Goal Orientations and Sources of Self-Confidence

One focus of the current work was to replicate and extend, to the athletic injury rehabilitation setting, the work of Williams (1994) regarding the associations between goal orientations and sources of competence information. The findings from the present study partially supported our hypotheses. That is, although there was a marginally significant relationship between task orientation and the mastery source of self-confidence at Time One, task orientation did positively and significantly predict this source of self-confidence at Time Two and Time Three.

In contrast, ego orientation predicted the demonstration of ability source of self-confidence information at Time One but eventually related to an emphasis on the mastery source by the third assessment period. Therefore, it seems that when highly ego-oriented athletes first entered the rehabilitation setting, they were still relying on normative comparisons to define performance progress. This is consistent with the theoretical tenets of goal perspective theory and past work on goals and their link to competence information (Duda, 1992; Nicholls, 1984, 1992; Williams, 1994). With respect to the latter unexpected finding, it might have been the case that the motivational environment manifested in the various training rooms sampled was very task-involving (Ames, 1992; Seifriz, Duda, & Chi, 1992). As a result and possibly overriding the goal orientation of individual athletes, personal mastery may have become more salient in terms of confidence judgments over the course of the rehabilitation.

In general, task orientation was associated with what would be considered an adaptive pattern of sources of confidence information across the three time periods. Athletes who were predisposed to emphasize a task-involved goal displayed a relatively consistent pattern of sources that should lead to the enhancement of self-confidence and maximal improvement in terms of their rehabilitation performance. For example, task orientation was positively linked to a greater reported utilization of physical/mental preparation as a source of confidence judgments at all three time intervals. The preparation that athletes do, both in terms of the physical and psychological aspects of their sport, is a more self-referenced

source of information regarding their ability level. This finding is also consonant with recent research on college-level athletes, revealing a link between task orientation and the use of and importance placed on mental skills as well as the employment of more active, problem-solving coping strategies to combat difficult situations within the competitive milieu (Kim & Duda, 1999).

Task orientation was also associated with the selection of the vicarious experience source of self-confidence information at Time Two and Time Three. At first glance, this finding might seem surprising. However, it is consistent with Nicholls' proposal regarding task-involved individuals' use of observational strategies as a facilitator of the learning process rather than as part of social comparison processes. Nicholls (1984, p. 132) points out: "It does not follow that task involvement means a complete lack of consideration of the accomplishments of others. One can look to other people for the purpose of learning without an explicit concern about one's standing relative to them."

Overall, the consistency of source selection that was associated with task orientation was not observed for ego orientation. Ego orientation positively predicted two sources of self-confidence at Time One (i.e., demonstration of ability, physical self-presentation). However, after Time One, ego orientation was associated with different sources at different times. This variable pattern may reflect an unfocused approach toward the rehabilitation for athletes high in ego orientation and/or a tendency to switch sources of confidence information throughout the difficult process of injury rehabilitation. In contrast to what was observed for task orientation, ego orientation was not associated with the vicarious experience or physical/mental preparation sources at any time during rehabilitation. Based on these findings, it is possible to infer that ego orientation is not associated with a reliance on modeling or degree of physical and psychological training/readiness in terms of confidence judgments in the context of athletic injury rehabilitation.

Both task and ego orientation significantly predicted the selection of the environmental sources of confidence information (i.e., social support, trainer's leadership, and environmental comfort) at all three time assessments. This suggests that, regardless of the athletes' goal orientation, the situational aspects of the rehabilitation context are influential in terms of confidence appraisals.

In total, the present findings provide partial evidence in support of a conceptually significant relationship between goal orientations and the sources of self-confidence judgments in the context of athletic injury rehabilitation. When explicating the results that were contrary to our hypotheses, it is important to distinguish how the concepts of task and ego orientation are operationalized based on goal perspective theory and contrast this to how the mastery and demonstration of ability subscales were operationalized based on Vealey's (1986) work.² Drawing from Vealey's (1986) Sport Confidence Model, the mastery subscale of the SSCQ is linked to a performance orientation (or the goal of performing well), whereas the demonstration of ability subscale is tied to an outcome orientation (or the goal to win). Therefore, while the mastery and demonstration of ability subscales provide a differentiation of the criteria underlying perceived success (i.e., success based on performing well versus success based on winning), they are constructed in a manner that reflects Vealey's (1986) perception of achievement goals that is not equivalent to the constructs embedded in goal perspective theory (Nicholls, 1984, 1989). More specifically, the criteria underlying the perception of achieving a task-involved goal are the exhibiting of high effort and the sense that performance was better in

regard to personal standards. The criteria underpinning an ego-involved goal is the demonstration of superior competence (i.e., performing better than others or performing the same with less effort), which may or may not entail a successful competitive outcome (namely, winning). Thus, the ambiguous nature of the mastery and demonstration of ability SSCQ subscales in regard to the constructs of task and ego orientation may have contributed to some of the unexpected findings regarding the source of self-confidence correlates of achievement goals in this study.

Sources of Self-Confidence and Confidence Restoration

At the beginning of the rehabilitation program, none of the sources emerged as significant predictors of the athletes' perceptions of self-confidence. Within the first two days of rehabilitation, the athletes may not have been able to identify which sources of information in the rehabilitation context were pertinent to helping them regain their confidence regarding athletic participation. By the midpoint of the rehabilitation, the performance-related sources, namely mastery and the demonstration of ability, were positively correlated with confidence restoration. This finding is reasonable considering that, among all of the sources, performance accomplishments (whether self-referenced or based on social comparison) are expected to be the most instrumental with regard to future confidence beliefs. Indeed, in past work within the rehabilitation setting, performance progress has been related to improved rehabilitation efficacy (Ewart, 1990).

Regression analyses indicated that, besides the performance sources of confidence information (i.e., the mastery and demonstration of ability), observational experiences (i.e., vicarious experience) and confidence restoration at Time One were predictors of confidence restoration at Time Two and Three. Vicarious (observational) experiences should be endemic to the rehabilitation setting. Besides relying on the trainer, it is also probable that injured athletes turned to other athletes who were currently injured or have recovered from injury to gain knowledge and insight on what to expect in rehabilitation (Feltz, Landers, & Raeder, 1979; Feltz, 1988; Flint, 1993).

Confidence restoration at Time One, however, accounted for the majority of the variance in both restoration scores at Time Two and Three. Aligned with Bandura's (1997) assumption regarding the inherent contribution of prior performance to future performances, the same relationship is predicted between efficacy beliefs assessed over time. As long as the determinants of confidence beliefs are the same on different occasions, these beliefs assessed over time are expected to be related. A significant predictive relationship between pre- and post-performance ratings of self-efficacy/confidence has been observed in previous work involving sport-related tasks (e.g., Feltz & Chase, 1998; Bandura, 1990, 1997).

Future Research

Future research needs to distinguish between what is truly adaptive and maladaptive in terms of the sources of athletes' confidence judgments in the rehabilitation setting. In particular, it is important that we do not ignore potential sources that are detrimental to building and maintaining confidence in the face of adversity such as injury. While the Sources of Self-Confidence Questionnaire provides a reliable and valid instrument to assess potential sources that are being used by athletes, additional sources of confidence that reflect seemingly maladaptive criteria for

enhancing confidence should be included. As presently constructed, the SSCQ is geared toward more positive sources of confidence information.

In addition to identifying maladaptive strategies adopted in the rehabilitation setting, future research would benefit from obtaining improved measures of confidence restoration and social support. With respect to the former variable, the current investigation was limited by using a baseline measure of confidence obtained after injury. In order to obtain a true baseline, confidence needs to be assessed prior to injury. Obviously, this assessment would be logistically difficult to obtain in most cases. Future research might also consider the different dimensions of social support that operate in the rehabilitation setting. Specifically, measures need to distinguish what type of support is being provided (e.g., informational, emotional) and whether this support is conceived of as facilitative or debilitating by the injured athletes (Udrys, 1996).

Consistent with a social cognitive approach, goal perspective in a particular environment is also dependent on the situational factors at hand (Nicholls, 1984). Besides goal orientations and perceptions of social support, it is possible that the perceived motivational climate in the training room may influence athletes' cognitive and affective responses within this milieu. The current results imply that the training rooms in this study were task-involving, and this may have influenced the athletes who were strongly ego oriented. Unfortunately, however, perceptions of the motivational climate in the training room were not assessed in this study. Examining the interplay between and potential influence of both the perceived motivational climate and dispositional goals may allow for a greater awareness of injured athletes' cognitive and emotional processes during this time of adversity.

Applied Considerations

The present study explored various psychosocial variables which were expected to be involved with the restoration of athletes' self-confidence following athletic injury. Our results, although preliminary, suggest some practical implications for maximizing the rehabilitation process in the case of intercollegiate athletes.

First, the findings indicated that the most salient sources of confidence information within the rehabilitation setting were the perceived leadership qualities of the athletic trainer and the athlete's degree of comfort with the athletic training (AT) environment. Further, the significance of such environmental factors for confidence judgments was more pronounced when athletes perceived greater social support from significant others including the athletic trainer, coach, and teammates. Thus, the consequences of competent and knowledgeable athletic trainers and a nurturing and supportive training room appear to go beyond the physical aspects of injury recovery. When athletic trainers are informed and informative and the climate in the training room seems familiar and less threatening, injured athletes are more likely to look to those in the AT setting to foster their confidence regarding the outcome of rehabilitation. The support of others outside the AT setting also contributes to this process. Applied sport psychology consultants should emphasize such psychosocial effects when working with athletic trainers.

Second, it is important to note that the strongest determinants of confidence restoration in this study were the athletes' initial confidence judgments in the rehabilitation setting. This result highlights the importance, especially during the early phase of rehabilitation, of the athletic trainer's setting a proper progression of exercises for the injured athlete that ensure objective and subjective success. Injured

athletes' initial level of confidence will likely be higher as well if athletic trainers provide positive performance feedback.

With respect to the role of observation, the current results imply that athletes utilize vicarious information within the rehabilitation setting to determine their perceived ability to return to full participation. In the present results, with baseline self-confidence entered into the equation, the reliance on vicarious information as a source of confidence information emerged as a negative predictor of confidence restoration.

From an applied standpoint, it appears that athletic trainers need to be aware of which models would be most effective and most debilitating in the rehabilitation process (Flint, 1993). Perhaps eyeing others in the training room reduces the confidence of those athletes who are initially quite confident. Clearly, vicarious information can enhance or decrease athletes' perceptions of ability regarding the task at hand. Schunk (1995) has advocated the use of coping-emotive models when individuals are trying to learn new skills (e.g., rehabilitation exercises) and simultaneously need to cope with difficulties and setbacks (e.g., the injury).

Finally, the findings provide additional information regarding the motivational advantages associated with athletes' possession of a strong task orientation. It seems that when their task orientation is high, athletes are more likely to turn to sources of confidence information that are more self-referenced rather than other-oriented or external in nature. When task orientation is more robust, athletes rely more on their physical and mental training and conditioning when formulating their expectations for a successful return to competition. They also tend to look at their personal improvement in the training milieu. Such sources of confidence are more within athletes' personal control and should exacerbate rather than diminish their degree of confidence. Thus, in terms of applied work, we have another incentive for reinforcing athletes' focus on task goals in the athletic domain.

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Authors' Notes

¹The research presented here is a part of a M.S. thesis completed by the first author under the direction of the second author at Purdue University.

²For a more detailed discussion of this issue, see Duda (1992) and Duda and Whitehead (1998).

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